

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
4 August 2005 (04.08.2005)

PCT

(10) International Publication Number
WO 2005/071265 A1

(51) International Patent Classification⁷: **F04B 35/04**,
49/06, H02K 41/02

Marcio Roberto [BR/BR]; Rua Albatroz, 416, CEP-
Joinville, SC (BR).

(21) International Application Number:
PCT/BR2005/000006

(74) Agent: **DANNEMANN, SIEMSEN, BIGLER
& IPANEMA MOREIRA**; Caixa Postal 2142,
CEP-22251-040 Rio de Janeiro, RJ (BR).

(22) International Filing Date: 19 January 2005 (19.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
P10400108-7 22 January 2004 (22.01.2004) BR

(71) Applicant (for all designated States except US):
**EMPRESA BRASILEIRA DE COMPRESSORES
S.A (EMBRACO)** [BR/BR]; Rua Rui Barbosa, 1020,
CEP-89219-901 Joinville-SC (BR).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

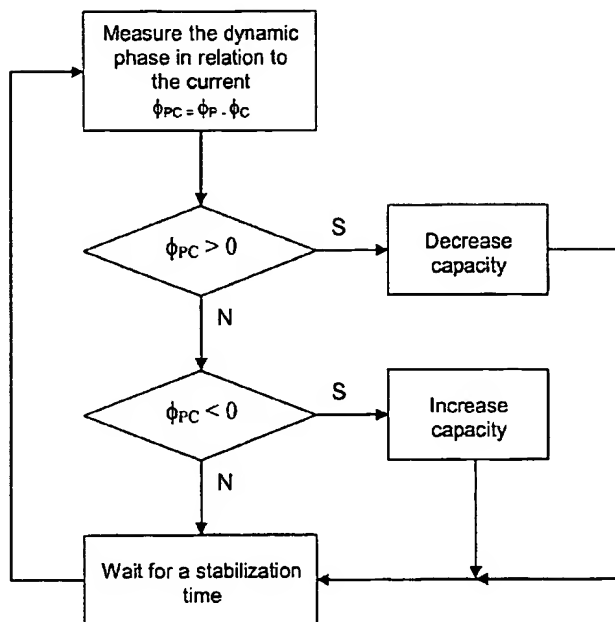
(72) Inventors; and

(75) Inventors/Applicants (for US only): **DAINEZ, Paulo**,
Sérgio [BR/BR]; Bloco 1, Apartment 302, Rua Rui
Barbosa, 1431, CEP- Joinville, SC (BR). **BERN-
HARD LILIE, Dietmar, Erich** [BR/BR]; Rua Orestes
Guimarães, 904, CEP-Joinville SC (BR). **THIESSEN,**

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,

[Continued on next page]

(54) Title: A LINEAR MOTOR, A LINEAR COMPRESSOR, A METHOD OF CONTROLLING A LINEAR COMPRESSOR, A COOLING SYSTEM, AND A LINEAR COMPRESSOR CONTROLLING A SYSTEM



(57) Abstract: A linear motor (10), a linear compressor (100), a method of controlling a linear compressor (100), a cooling system (20) and a system of controlling a linear compressor (100) to operate a linear compressor (100) in resonance in it's the greatest possible efficiency throughout its operation are described. One of the ways of achieving these objectives is by means of a linear compressor (100) applicable to a cooling system (20), the linear compressor (100) comprising a piston (1) driven by a linear motor (10), the piston (1) having displacement range controlled by means of a controlled voltage (V_M), the controlled voltage (V_M) having a voltage frequency (ϕ_P) applied to the linear motor (10) and adjusted by a processing unit (22), the range of piston (1) displacement being dynamically controlled in function of a variable demand of the cooling system (20), the linear compressor (100) having a resonance frequency, the processing unit (22) adjusting the range of piston (1) displacement, so that the linear compressor (100) will be dynamically kept on resonance throughout the variations in demand of the cooling system (20).

WO 2005/071265 A1

WO 2005/071265 A1



SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— with international search report